

Claims

1. A method for manufacturing internally and/or externally profiled rings, in particular rolling bearing rings and transmission rings in completely grinding-ready state from pipe material or solid material, in which machine-cutting methods such as turning and forming methods such as radial-axial pipe roll forming and/or roll grooving are combined with one another sequentially and/or parallel, characterized in that during rolling of the profile a counterforce relative to the flow direction of the pipe material is generated so that the material flow in axial and/or radial direction can be controlled such that the flowing material is integrated into the shaping of the profile.
2. The method according to claim 1, characterized in that the control of the material flow is realized by a counterpressure tool (5) which counteracts an unhindered axial material flow by a defined force to be applied and, as a result of this, generates material flow optionally in the axial and/or radial direction.
3. The method according to claim 1 or 2, characterized in that the control of the axial material flow is realized by additional promotion or limitation of the axial movability of the outer profile rolling tool by hydraulic and/or mechanical means.
4. The method according to one of the claims 1 to 3, characterized in that for realizing a two-ring or multi-ring machining in accordance with the outer contour simultaneously two or several rings are rolled with a pre-ring, in that first a ring profile remaining on the pipe is rolled by (radial) axial pipe roll forming and/or roll grooving and, subsequently, rolling of additional ring profiles is carried out so that several rolled ring profiles are generated on the pipe wherein the last ring profile remains on the pipe while the upstream ring

profiles are finished by machine-cutting and subsequently separated from the pipe, and provides the pre-ring during the subsequently repeated processing course.

5. The method according to one of the claims 1 to 4, characterized in that the inner and/or outer profiling of the ring is performed with a single clamping action.

6. An arrangement for manufacturing internally and/or externally profiled rings, in particular rolling bearing rings and transmission rings in a completely grinding-ready state from pipe material or solid material, comprising a rolling device with an outer profile rolling tool (2) and an inner profile rolling tool (3) and optionally further devices for turning, characterized in that the inner profile rolling tool (3) has an axially movable counterpressure tool (5) limiting the material flow and forming a contact surface for the pipe (1) projecting past the outer diameter of the inner profile rolling tool so that the material flow is controllable in the axial and/or radial direction.

7. The arrangement according to claim 6, characterized in that in the case of a multi-spindle automatic lathe the rolling device is provided with an outer profile rolling tool (2) and inner profile rolling tool (3) in one spindle position.

8. The arrangement according to claim 6, characterized in that, for a combination of at least one profile rolling machine and a lathe, the profile rolling machine has correlated therewith one or several processing devices for machine-cutting or lathes that separate the ring from the pipe, immediately after profiling by forming by radial-axial pipe roll forming, by forming and/or by machine-cutting, and the finishing operation by machine-cutting of the ring is realized not until it is already separated from the pipe, including transfer of the separated and pre-profiled ring to the downstream

processing devices for machine-cutting or lathes without intermediate storage.

- 5
9. The arrangement according to one of the claims 6 to 8, characterized in that the profile rolling tools (2, 3) are axially movable by means of correlated hydraulic pistons (7) and hydraulic cylinders (8), respectively.
 10. The arrangement according to claim 9, characterized in that the inner profile rolling tool (3) with the counterpressure tool (5) is connected by means of a pressure-loadable piston cylinder arrangement to the compound slide (10).

In connection with 5 sheets of drawings